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FTIR Evaluation of Mouse Tissue Preparation Procedures

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Beamline(s): U10B

Introduction: As a first test for this PI in the application synchrotron IR to the study of various tissues, some test samples were prepared and mapped. Samples were of control mouse brain. Further studies on other mouse and rat organs are underway in the current year (2001-2002), following this successful test of in-house sample preparation.

Methods and Materials: Thin sections of rat brain were mounted on reflective slides and morphologically distinct regions of the brain were selected for synchrotron IR mapping. Various sample preparation procedures were tested, including de-lipidization through extraction in solvents for different time periods. Spectroscopic map data was processed with the Nicolet Omnic/Atlus software for the Nicolet spectrometer and Continuum microscope at the U10B beamline.

Results: Preliminary results showed that delipidization was only partial with the procedures followed, and was probably not a valuable step in sample preparation for these cases.

Conclusions: Further studies on synchrotron IR mapping of animal response to inflammatory diseases and possible effects of alternate treatments are now underway. Experience in sample preparation and results to be expected from standard maps have provided a basis for further work.

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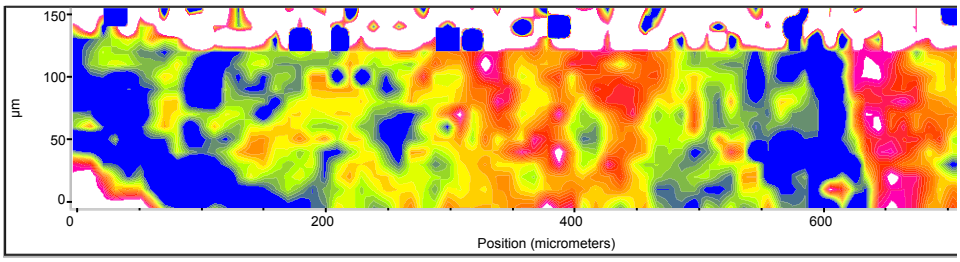

Processed synchrotron IR spectromicroscopic image of portion of rat brain. Blue areas correspond to local concentrations of brain neurons, while yellow-red portions correspond to neuropil.